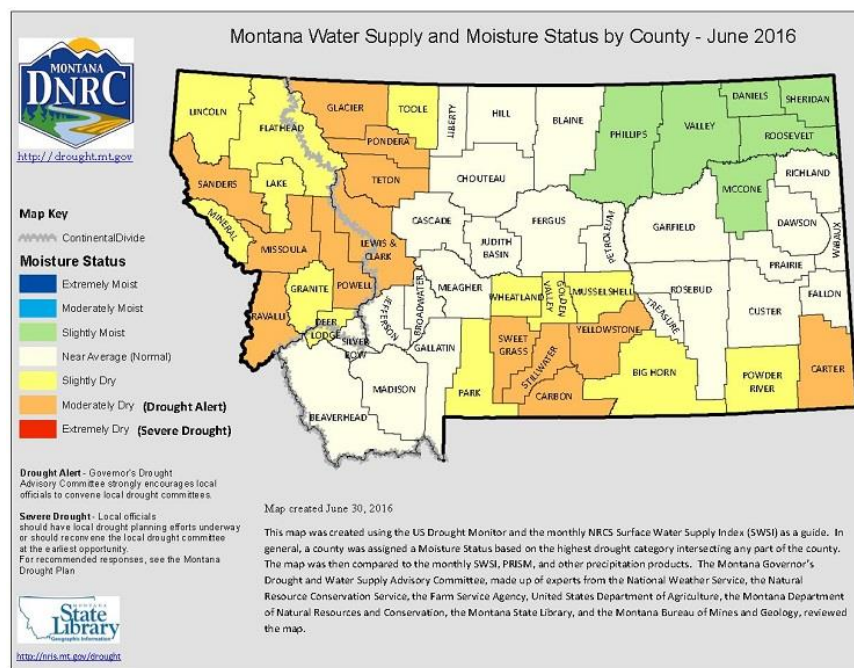


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Overview:

The state as a whole is dealing with two years running of low snowpack coupled with early runoff. The spring melt occurred about 2-3 weeks early this year and all mountain snowpack reserves were depleted by the middle of May. As a result, the state is currently at the mercy of summer rains to make up any deficit in soil moisture or stream flows. The notable exception to this story is in the northeast of the state, where record rainfalls have led to plentiful water conditions and even reports of late-season flooding. Here is a map summarizing conditions as they were at the end of June 2016.



https://mslservices.mt.gov/Geographic_Information/Maps/Drought/

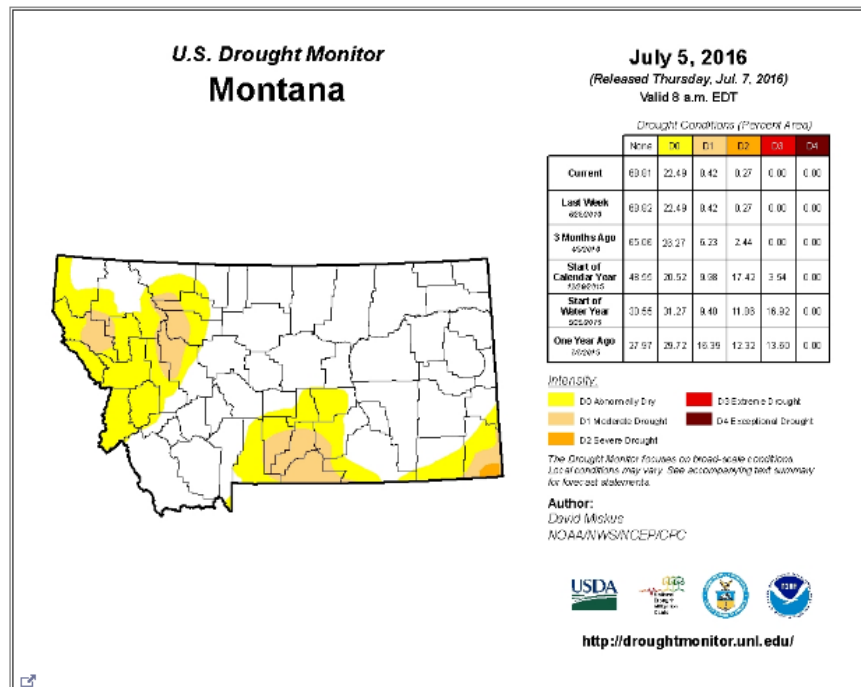
Drought Conditions:

According to the U.S. Drought Monitor, Montana continues to face pockets of dry conditions. When any portion of a county meets the D2 drought intensity rating (dark orange) for 8 consecutive weeks or a higher drought intensity rating, the USDA can automatically trigger a “Fast Track Secretarial” disaster designation making funding and loan assistance programs available. To date, only Carter County has been designated with a D2 intensity level and only for one week.

- The **Yellowstone** basin is particularly dry despite May rainfall that boosted reservoir levels. Sweet Grass, Stillwater, Carbon, Carter, and Powder River are all listed as either in Moderate or Severe Drought.

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- The **Lower Missouri** is not in drought, with the exception of Golden Valley and Musselshell counties, which are abnormally dry.
- The **Upper Missouri** basin is especially dry along the Rocky Mountain Front. The Big Hole, Ruby and Beaverhead Rivers are also struggling. A Drought Alert was recently issued by the Lt. Governor, as chair of the Governor's Drought and Water Supply Advisory Committee (DWSAC) for Glacier, Pondera, Teton and Lewis & Clark Counties, where all users are encouraged to conserve water resources.
- The **Clark Fork and Kootenai** basins are also showing increasingly abnormally dry conditions, particularly on the west side of the Rocky Mountain Front and around Flathead Lake. Without additional precipitation it is likely the Bitterroot, Blackfoot and Upper Clark Fork will next show signs of drought. Sanders County is currently in moderate drought.



<http://droughtmonitor.unl.edu/>

Flooding Conditions:

Phillips County was under a flood advisory, but it was canceled on July 12, 2016.

Precipitation:

There is no snow left except in very high elevations. The runoff this year occurred about 2-3 weeks early, leaving the entire state at the mercy of summer rains to add any water supply. The total precipitation numbers for April -July show most of the state in the negatives, with the exception of the Northeast. The recent rain event mid-July added significantly to stream flows, but these flows will provide limited reprieve in the absence of continued rains. Meanwhile, reports continue to come in from ag producers in Sweet Grass, Stillwater, Deerlodge, and Powell counties of hauling water to livestock.

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- The **Yellowstone** shows severely dry conditions in the southwest portion of Big Horn County as a result of spreading drought from South Dakota and Wyoming. Precipitation on July 10th increased in northern Gallatin, Sweet Grass, Stillwater, Yellowstone and Big Horn counties to above 100% of normal for this time of year.
- The **Upper Missouri** shows dry conditions coming up from the south in the West Yellowstone and Henry's Fork areas impacting the southern portions of Madison and Gallatin counties. West Yellowstone is considering a moratorium on all construction due to low water (http://www.bozemandailychronicle.com/news/water-shortage-may-force-west-yellowstone-building-moratorium/article_df36cf30-0f13-5ae6-874d-d131d639b86d.html). Precipitation on July 10th increased in northern Gallatin, Jefferson, Silver Bow and eastern Beaverhead counties to above 100% of normal for this time of year.
- The **Lower Missouri** shows fairly wet conditions, and a flood warning is in effect for Phillips county.
- The **Clark Fork and Kootenai** basins are generally 50-70% below average precipitation. The rain event on July 10th added significant amounts of water particularly in Missoula and northern Ravalli counties.

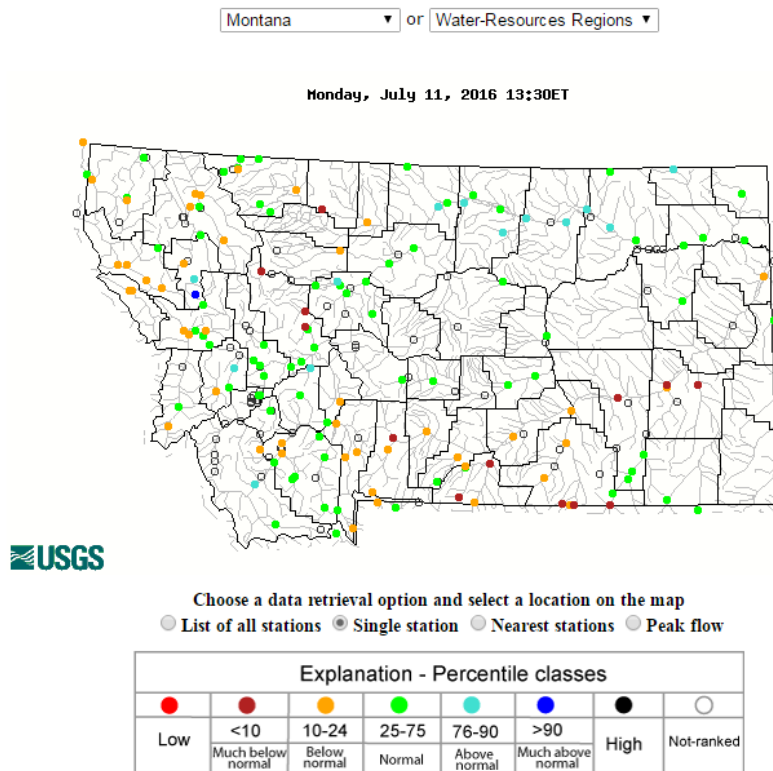
Real-Time Streamflow:

In general, the state is experiencing low moisture conditions in the Rocky Mountain Front, along the Yellowstone River, and in the west and northwest due to two years of low snow accumulation during the winter months, early runoff and higher temperatures. The notable exception to this summary is the Northeast portion of the state, where record rain events have led to above normal flow conditions. While drought is not widespread throughout the state, it is thanks to lucky rain events that have kept conditions at normal or just below normal. In the absence of more precipitation, conditions will continue to deteriorate.

- The **Yellowstone** is running at flows much below normal for the full extent of its reach, with the Shields River near Livingston at 30% of normal and setting a new all-time low in 37 years of gage records for this site.
- The **Lower Missouri** continues to experience above normal flows for this time of year, with a few exceptions. The South Fork of the Musselshell River above Martinsdale, is currently at 60% of normal, but prior to the July 10-11 rain event, it was at 18% of normal.
- The **Upper Missouri** has very mixed conditions, with the majority of the area experiencing below normal flows. While currently gages in the Big Hole valley are normal, the month of June was the 4th driest on record. Currently, flows where the Big Hole, Jefferson and Ruby meet are below normal and the Missouri at Toston is at 43% of normal in 82 years of recording. The Sun, Marias, Teton, Dearborn and Prickly Pear are all much below normal. Red Rock River below Lima Reservoir, however, is at 128% of normal with 93 years of record.
- The **Clark Fork and Kootenai** basins are also characterized by mixed conditions. The West Fork of the Bitterroot River near Conner, MT. has set several all-time new lows in 75 years of record keeping and remains below normal. The Blackfoot near Bonner is currently reading at 965 cfs, but the area's trigger of 700 cfs for drought response remains on standby. The Mission Creek above the reservoir near St. Ignatius is showing flows much above normal with flows of 234 cfs.

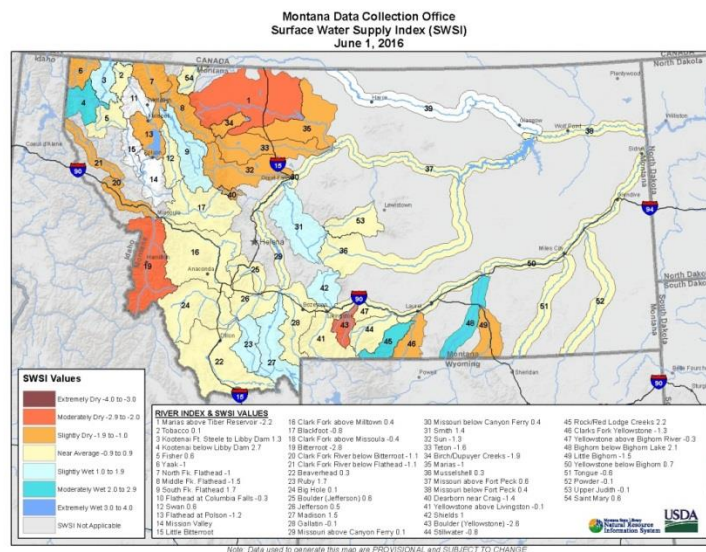
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Map of real-time streamflow compared to historical streamflow for the day of the year (Montana)



<http://waterwatch.usgs.gov/?m=real&r=mt>

Surface Water Supply Index (SWSI):



<http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/waterproducts/surface/#>

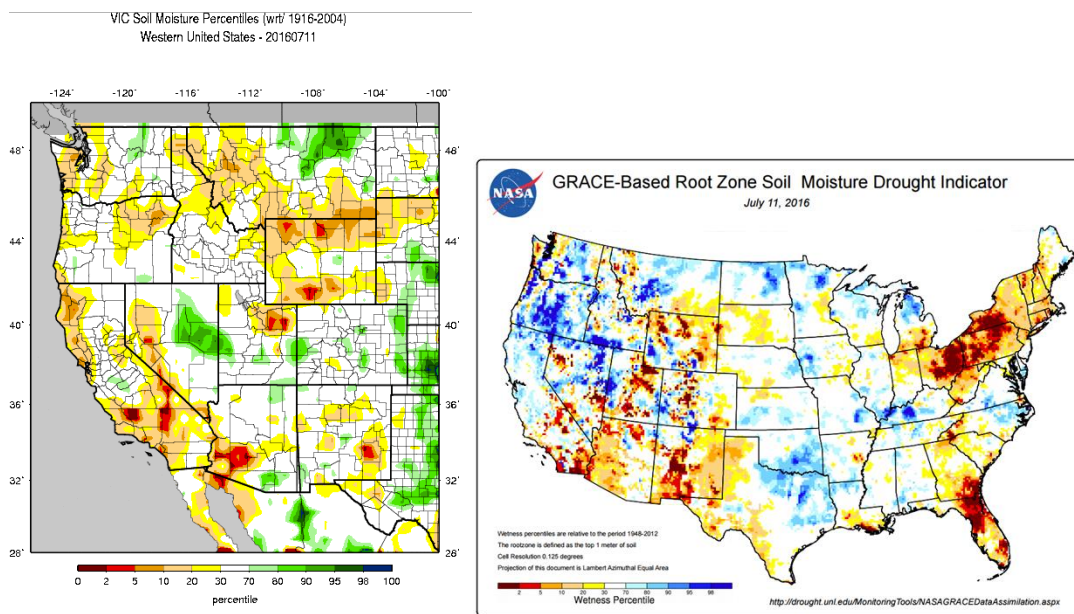
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Soil Moisture:

According to the Crop Progress Report, about 60% of the state currently has adequate topsoil and subsoil moisture conditions, which is ~15% better than this time last year, and slightly better than the 5-year average. Local conditions vary widely, though.

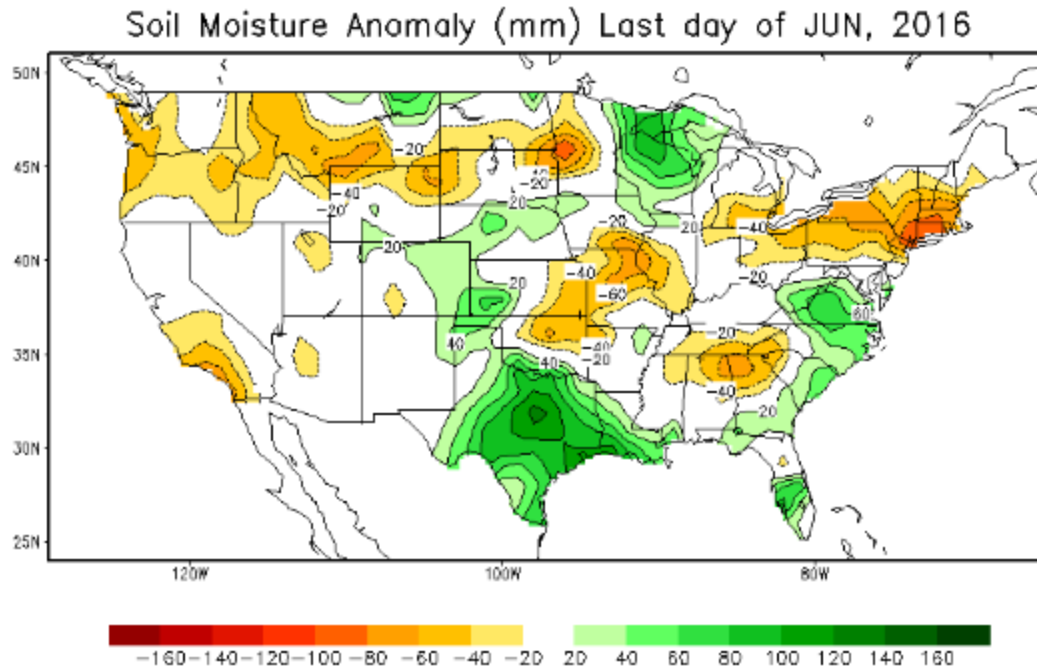
https://www.nass.usda.gov/Statistics_by_State/Montana/Publications/Crop_Progress_&_Condition/2016/MT_Crop_Progress_07102016.pdf

- Soil moisture in the **Yellowstone** is in the 5-10th percentile for much of Park, Gallatin, Sweet Grass, Rosebud, Custer, Carter, Powder River, Big Horn and Carbon counties. Rootzone soil moisture is also significantly depleted in these areas.
- The **Lower Missouri** is not experiencing soil moisture deficit as a whole, with some exception in Wheatland, Meagher and Cascade counties. Soil moisture in the northeast is in the 80-90th percentile. Root zone soil moisture is also doing well.
- The **Upper Missouri** is currently holding onto soil moisture, but dry conditions are moving in from both the east and the west. The Rocky Mountain Front remains an area of concern with a Drought Alert set for Glacier, Pondera, Teton and Lewis & Clark counties. Severely depleted soil moisture is apparent in pockets in this area, which may have an impact on groundwater as wells in this area are likely to respond to drought at a two year lag, so last year's low water conditions are likely to impact groundwater this year.
- The **Clark Fork and Kootenai** basins are especially dry in the Northwest around Powell, Granite, Missoula, Lake and Sanders counties. Areas of Flathead County are likely to also pose soil moisture issues going forward in the absence of rain.



http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/west.vic.sm_qnt.gif
<http://drought.unl.edu/monitoringtools/nasagracedataassimilation.aspx>

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http://www.cpc.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#

Reservoirs:

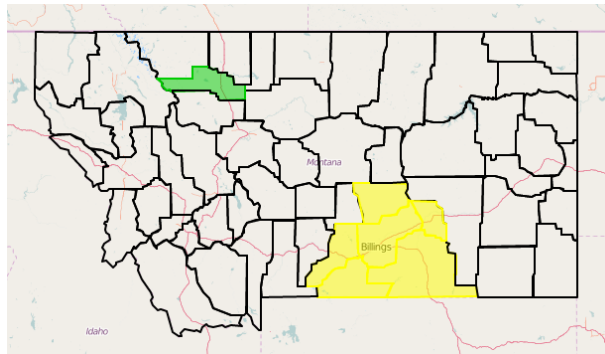
State-wide reservoirs peaked at the end of May, with most reaching full pool and spilling earlier than normal due to the advanced snowmelt rates. Since then inflows have dropped to near record lows for this time of year and demand will continue. Without inflows to refill the percentages will drop quickly.

- **Yellowstone:** Cooney – 96% of capacity; Cottonwood – 91% of capacity; Tongue River – 95% of capacity; Bighorn – 94% of full pool
- **Lower Missouri:** Ackley – 90% of capacity; Bair – 70% of capacity; Deadman's Basin – 87% of capacity; Frenchman – 98% of capacity; Martinsdale – 66% of capacity; N. Fk. Smith – 75% capacity; Yellowstone – 59% of capacity; Nelson – 81% of full pool; Fresno – 86% of full pool
- **Upper Missouri:** Middle Creek – 97% of capacity; Nilan – 87% of capacity; Ruby River – 88% of capacity; Willow Creek – 95% of capacity; **Clark Canyon – 50% of full pool (similar to last year, irrigation is just below their full allotments and won't change for the rest of the season. Winter flows on the Beaverhead River may be impacted if it continues to get drier);** Canyon Ferry – 97% of full pool; Willow Creek – 75% of full pool; **Gibson – 49% of full pool;** Pishkun – 62% of full pool; Tiber – 89% of full pool; Sherburne – 87% of full pool.
- **Clark Fork/Kootenai:** E.F. Rock Creek – 87% of capacity; **Nevada Creek – 60% of capacity;** W.F. Bitterroot – 101% of capacity; Hungry Horse – filled to about 1 foot from full elevation is beginning a slow drawdown. Drawdown of 10 feet expected by end of September. Expect discharges of about 2,100 cfs. Discharges would be increased if the Flathead River at Columbia Falls is forecast to drop below the minimum flow of 3,500 cfs. Lake Como – currently being drawdown for irrigation with current withdrawals anticipated to be near normal levels by the end of the irrigation season.

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Wildfire:

The potential for significant wildfire outlook for the state is concentrated in the Southcentral. In addition, there is a local burn ban for Pondera County.



<http://firerestrictions.us/mt/>

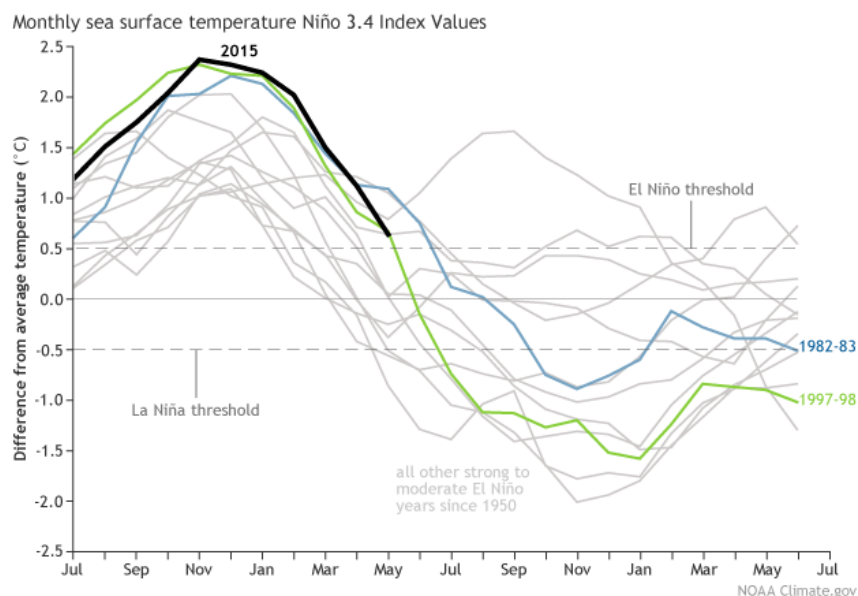
Fisheries:

Hoot Owl fishing restrictions were instated for the East Gallatin, Gallatin, Jefferson, and Madison around the beginning of July and are still in effect. View more information and Water Body Reports here:

<http://fwp.mt.gov/fishing/guide/waterClosure.html>

ENSO:

Experts agree the El Niño cycle is over and that it was one of the strongest since 1950. The potential of a La Niña cycle to follow is anticipated, but is currently in a holding pattern. If temperatures go down and precipitation goes up, it likely won't be until September.



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Monthly sea surface temperature in the Niño 3.4 region of the tropical Pacific compared to the long-term average for all moderate-to-strong El Niño years since 1950, showing how 2015/16 (black line) compares to other events. Climate.gov graph based on [ERSSTv4](#) temperature data.

<https://www.climate.gov/news-features/blogs/enso/june-enso-discussion-new-neutral>

Resources:

- DNRC/Water Court Enforcement Projects:
<http://dnrc.mt.gov/divisions/water/adjudication/water-distribution>
- National Drought Resiliency Project:
<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/newsroom/releases/?cid=STELPRDB1257622>
- Current Conditions Maps (hourly/daily):
<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/snow/products/?cid=nrcseprd1137464>
- USDA Drought Programs and Assistance:
http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=usda_drought_programs.html
- Montana Drought Website: www.drought.mt.gov